UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
KIM, PAUL

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2009*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-46,48-54 and 56-73* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-46,48-54 and 56-73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *9/14/09*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This Office action is responsive to the following communication: Amendment filed on 12 August

2009.

2.   Claims 26-46, 48-54, and 56-73 are pending and present for examination.

Response to Amendment

3.   Claims 26, 54, 63, 64, 69, and 73 have been amended.

4.   No claims have been cancelled.

5.   No claims have been added.

6.   While Applicant asserts that "the Examiner noted that the amendments discussed with respect to

proposed claim 1 would likely over the outstanding rejection," the Examiner notes the contrary for the

purposes of clarification. In the Examiner Interview Summary Record mailed 20 August 2009, it is noted

that "the proposed amendment would most likely fail to overcome the cited prior art in that Green would

read upon the claim limitation of 'the virtual data store being based on the backup data and the original

data store.'"

Information Disclosure Statement

7.   The information disclosure statement (IDS) submitted on 14 September 2009 is in compliance

with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered

by the examiner.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 26-29, 32, 38-47, 54-61, 63-65, 69, 71, and 73** are rejected under 35 U.S.C. 103(a)

as being unpatentable over Green et al (USPGPUB 2003/0167380, hereinafter referred to as GREEN),

filed on 22 January 2003, and published on 4 September 2003, in view of Kedem et al (U.S. Patent No.

6,598,131, hereinafter referred to as KEDEM), filed on 11 October 2002, and issued on 22 July 2003.

10. **As per independent claims 26, 54, 63, 64, 69, and 73**, GREEN, in combination with

KEDEM, discloses:

A method for providing data, the method comprising the steps of:

storing all write commands directed to a primary data store in an original data store during a time interval {See KEDEM, C3:L63-C4:L4, wherein this reads over "the LDIM functions to intercept and process requests that are intended to be received by the LPSD" and "[c]ommon are read/write requests specifying an address"}, so as to accumulate backup data;

receiving a request {See GREEN, Para. 0147, wherein this reads over "a restore command is received"} to create a virtual data store that reflects a state of the primary data store at a specified time, the specified time being any point in time during the time interval {See GREEN, Para. 0148, wherein this reads over "the user decides to restore the system to the state in which it existed at 12:11 PM"}, the virtual data store being created from data stored in the original data store;

receiving a storage protocol request for data at a specified address in the virtual data store {See GREEN, Para. 0148, wherein this reads over "volumes E and F"}; and

transmitting the requested data in response to the storage protocol request {See GREEN, Figures 42 and 43; and Para. 0148, wherein this reads over "Fig. 42 illustrates the state of the system prior to the restore and Fig. 43 illustrates the state of the system following the restore"}.

While GREEN may fail to expressly disclose the method step of backing up an original data store

by receiving all write commands for the original data store during a time interval, KEDEM discloses a data

image management system wherein read/write requests are intercepted. Therefore, in light of the

aforementioned disclosures by GREEN and KEDEM, it would have been obvious to one of ordinary skill in

the art at the time the invention was made to modify the above invention suggested by GREEN by

combining it with the invention as disclosed by KEDEM. The results of this combination would lead to a

method wherein write commands are received and used to create a virtual data store.

Additionally, it would be inherent to the claimed invention to select a specified time from a

continuous time interval wherein the claimed method for providing data requires that the request to

create a virtual data store reflect a state of an original data store at a specified time.

One of ordinary skill in the art would have been motivated to do this modification such that the

write requests may be intercepted for use in the creation of a data store.

11.   **As per dependent claims 27, 57, and 58**, GREEN, in combination with KEDEM,

discloses:

> The method of claim 26 wherein the original data store comprises another virtual data
> store {See GREEN, Para. 0008, wherein this reads over "[t]he object of the snapshot for which the image
> is provided may be of a . . . logical partition"}.

12.   **As per dependent claims 28, 40, 41, and 59,** GREEN, in combination with KEDEM,

discloses:

> The method of claim 27 wherein the original data store comprises a current store and a
> time store {See GREEN, Para. 0146, wherein this reads over "restore functionality that allows
> restoration of a volume to any state recorded in a snapshot while retaining all snapshots"}.

13.   **As per dependent claims 29 and 60**, GREEN, in combination with KEDEM, discloses:

> The method of claim 26 wherein the virtual data store comprises a logical unit {See GREEN,
> Para. 0008, wherein this reads over "[t]he object of the snapshot for which the image is provided may be
> of a . . . logical partition"}.

14.   **As per dependent claim 32**, GREEN, in combination with KEDEM, discloses:

> The method of claim 26 wherein the request to create the virtual data store is received
> via a user interface {See GREEN, Figure 14; and Para. 0122, wherein this reads over "allows the user
> to schedule a new snapshot"}.

15.   **As per dependent claim 38, 39, and 61**, GREEN, in combination with KEDEM,

discloses:

> The method of claim 54, further comprising, before the generating step, the step of
> receiving a request to create the virtual data store {See GREEN, Para. 0126, wherein this
> reads over "the user is able to request that a recovery disk be created"}.

16.   **As per dependent claims 42 and 71**, GREEN, in combination with KEDEM, discloses:

> The method of claim 26 wherein the original data store comprises at least one terabyte
> of data {See GREEN, Figure 44; and Para. 0006, wherein this reads over "If a terabyte of data is
> to be backed up, then a terabyte of storage capacity is required."}.

17.   **As per dependent claim 43**, GREEN, in combination with KEDEM, discloses:

The method of claim 42 wherein the original data store comprises multiple physical storage devices {See GREEN, Figure 44; and Para. 0046, wherein this reads over "[t]he computer m ay operate in a networked environment using logical connections to one or more remote computers" and "[s]uch networking environments are commonplace in . . . intranets and the Internet"}.

18.   **As per dependent claim 44**, GREEN, in combination with KEDEM, discloses:

The method of claim 43 wherein the multiple physical storage devices comprise at least ten physical storage devices {See GREEN, Figure 44; and Para. 0046, wherein this reads over "[t]he computer m ay operate in a networked environment using logical connections to one or more remote computers" and "[s]uch networking environments are commonplace in . . . intranets and the Internet"}.

19.   **As per dependent claim 45**, GREEN, in combination with KEDEM, discloses:

The method of claim 44 wherein the multiple physical storage devices comprise at least 100 physical storage devices {See GREEN, Figure 44; and Para. 0046, wherein this reads over "[t]he computer m ay operate in a networked environment using logical connections to one or more remote computers" and "[s]uch networking environments are commonplace in . . . intranets and the Internet"}.

20.   **As per dependent claim 46**, GREEN, in combination with KEDEM, discloses:

The method of claim 26 wherein the virtual data store comprises a read only data store {See GREEN, Para. 0160, wherein this reads over "the snapshots maintained by the firmware are read only"}.

21.   **As per dependent claims 47 and 55**, GREEN, in combination with KEDEM, discloses:

The method of claim 54 wherein the specified time is selected from a substantially continuous time interval {See GREEN, Para. 0062, wherein this reads over "the first snapshot cache was being dynamically created between times 5 and 10 and actually changed from time 8 to time 9; and Para. 0148, wherein this reads over "the user decides to restore the system to the state in which it existed at 12:11 PM"}.

22.   **As per dependent claim 56**, GREEN, in combination with KEDEM, discloses:

The method of claim 55, further comprising the step of copying the virtual data store to another data store {See GREEN, Para. 0066, wherein this reads over "Data 'E' is written to this address at time 4, replacing data 'B'"}.

23.   **As per dependent claim 65**, GREEN, in combination with KEDEM, discloses:

The system of claim 64, further comprising a storage protocol write request {See GREEN Para. 0057, wherein this reads over "[t]he letters (E, F, G, H, I, J, K, and L), shown within this grid, represent specific data for which a command to write such specific data to the volume at the corresponding address and at a specific time point has been received"}.

Claim Rejections - 35 USC § 103

24.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102
> of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill
> in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention
> was made.

25.   **Claims 30-31, 33-37, 48-53, 62, 66-68, 70, and 72** are rejected under 35 U.S.C. 103(a) as

being unpatentable over GREEN, in view of KEDEM, and in further view of Official Notice.

26.   **As per dependent claims 30, 51, and 66**, the Examiner takes Official Notice that it would

have been obvious and widely-known to one of ordinary skill in the art to use single protocol request

packets. GREEN, in combination with KEDEM and Official Notice, would disclose a method wherein both

the request to create the virtual data store and the storage protocol request are received in a single

protocol request packet. It would have been obvious to one of ordinary skill in the art at the time the

invention was created to transmit both the request to create the virtual data store (e.g. a new logical

unit) and the storage protocol request in a single protocol request packet. One of ordinary skill in the art

would acknowledge that a data packet may commonly include other information such as read and write

commands.

27.   **As per dependent claim 31**, the Examiner takes Official Notice that it would have been

obvious and widely-known to one of ordinary skill in the art that different data packets are used in

creating a virtual data store and a storage protocol request. GREEN, in combination with KEDEM and

Official Notice, would disclose a method wherein the request to create the virtual data store is received in

a different data packet than the storage protocol request. It would have been obvious to one of ordinary

skill in the art at the time the invention was created to separately transmit either of the request to create

the virtual data store (e.g. a new logical unit) and the storage protocol request in a single protocol

request packet. One of ordinary skill in the art would acknowledge that a data packet may commonly

include only one command, such as a request to create a virtual data store or a storage protocol request.

28.   **As per dependent claim 33**, the Examiner takes Official Notice that it would have been

obvious and widely-known to one of ordinary skill in the art a storage protocol request is used to create a

virtual data store. GREEN, in combination with KEDEM and Official Notice, would disclose a method

wherein the request to create the virtual data store is received via the storage protocol request. It would

have been obvious to one of ordinary skill in the art at the time the invention was created to receive the

request to create the virtual data store via a standard storage protocol request.

29.   **As per dependent claim 34**, the Examiner takes Official Notice that it would have been

obvious and widely-known to one of ordinary skill in the art that a storage protocol request would

comprise a standard read request. GREEN, in combination with KEDEM and Official Notice, would

disclose a method wherein the storage protocol request comprises a standard read request. It would

have been obvious to one of ordinary skill in the art at the time the invention was created to have a

storage protocol request comprise a standard read request. One of ordinary skill in the art would

acknowledge that a standard read requests are used in storage protocol requests.

30.   **As per dependent claim 35, 52, and 67**, the Examiner takes Official Notice that it would have

been obvious and widely-known to one of ordinary skill in the art that a SCSI read request be used in the

storage protocol request. GREEN, in combination with KEDEM and Official Notice, would disclose a

method wherein the storage protocol request comprises a SCSI read request. It would have been

obvious to one of ordinary skill in the art at the time the invention was created to have a storage protocol

request comprise a SCSI read request. SCSI is commonly known in the field of the claimed invention to

provide a standard high-speed parallel interface. Hence, the use of a SCSI read request for a storage

protocol request would have been obvious to one of ordinary skill in the art at the time the invention was

created.

31.   **As per dependent claims 36, 37, 53, and 68**, the Examiner takes Official Notice that it would

have been obvious and widely-known to one of ordinary skill in the art that a Fibre Channel protocol

request be used. GREEN, in combination with KEDEM and Official Notice, would disclose a method

wherein the storage protocol request comprises a Fibre Channel protocol request. It would have been

obvious to one of ordinary sill in the art at the time the invention was created to have a storage protocol request comprise a Fibre Channel protocol request. Fibre Channel protocols are commonly known in the field of the claimed invention to provide a standardized active intelligent interconnection scheme, called a Fabric, to connect devices. Hence, the use of a Fibre Channel protocol request for a storage protocol request would have been obvious to one of ordinary skill in the art at the time the invention was created.

32.   **As per dependent claims 48 and 70**, the Examiner takes Official Notice that it would have been obvious and widely-known to one of ordinary skill in the art that data maybe transmitted substantially instantaneously. GREEN, in combination with KEDEM and Official Notice, would disclose a method wherein the data is transmitted substantially instantaneously in response to the storage protocol request. Data is commonly transmitted instantaneously in response to a storage request. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was created to have data transmitted instantaneously.

33.   **As per dependent claims 49 and 72** the Examiner takes Official Notice that it would have been obvious and widely-known to one of ordinary skill in the art that data be transmitted in less than 1 millisecond. GREEN, in combination with KEDEM and Official Notice, would disclose a method wherein the data is transmitted in less than 1 millisecond. Transmissions of data commonly occur in less than 1 millisecond. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was created to have data transmitted within a millisecond.

34.   **As per dependent claim 50**, the Examiner takes Official Notice that it would have been obvious and widely-known to one of ordinary skill in the art that writing of data would occur in response to a write request. GREEN, in combination with KEDEM and Official Notice, would disclose a method wherein the step of writing data to the virtual data store occurs in response to a storage protocol write request. Any process wherein data is written to the virtual data store impliedly requires some write request. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was created to have data written to a virtual data store in response to a storage protocol write request.

35.   **As per dependent claim 62**, the Examiner takes Official Notice that it would have been

obvious and widely-known to one of ordinary skill in the art that a data store may be generated within

one second of a request to create said data store. GREEN, in combination with KEDEM and Official

Notice, would disclose a method wherein the virtual data store is generated within one second of the

request to create the virtual data store. It is commonly known to one of ordinary skill in the art that

where a request is submitted, generation of a virtual data store may occur within one second.

Response to Arguments

36.   Applicant's arguments filed 21 August 2008 have been fully considered but they are not

persuasive.

    a.   Claim Rejections under 35 U.S.C. 103 – Green and Kedem

            Applicant asserts the argument that "Green does not disclose a continuous capture of

historical data, only a method to freeze the volume at discrete time intervals within one or more

snapshots." See Amendment, page 18. The Examiner respectfully disagrees. Wherein Green et

al discloses that "the actual time interval between each discrete chronological time point and

within each time point may be of any arbitrary duration," it would have been obvious to one of

ordinary skill in the art that snapshots may be taken of a primary data store in a manner which

presented the capture of historical data to be continuous. See Green et al, [0056]. While

Applicant asserts that the original files could not be restored "as they existed at 12:15," the

Examiner notes, in light of the aforementioned disclosure by Green et al, that one of ordinary skill

in the art would have readily discerned that snapshots of the system could have been made in a

continuous manner every minute such that a snapshot of the system at 12:15 would be available.

            Additionally, Applicant asserts the argument that Green fails to disclose "backing up an

original data store by receiving all write commands for the original data store during a time

interval so as to accumulate backup data to restore the original data store to any point in time

during the time interval." See Amendment, page 20. The Examiner respectfully disagrees in twofold.

       i.   Firstly, it is noted that Applicant's Specification notes that "[t]he specified time can be selected from a substantially continuous time interval." (emphasis added). See Specification, [0017]. Additionally, Applicant's Specification notes that "[t]he first time can be selected from a substantially continuous time interval, typically between a past time and the current time." (emphasis added). See Specification, [0026]. Accordingly, it is noted that Applicant's present invention fails to enable a restoration of the volume to any point in time during a time interval. That is, wherein the selection of a time is from a substantially continuous time interval, said time interval would obviously contain gaps or periods of time wherein selection is not enabled. Wherein the time interval is only substantially continuous, said time interval would not consist of every and all time points within the time interval.

       ii.   Secondly, while Applicant asserts the argument that Green "does not allow for restoration of data outside of the limited bounds of the individual snapshots," the Examiner notes that said individual snapshots may be made in a continuous manner such that a snapshot of the volume is taken at every second. Furthermore, the Examiner notes that Green discloses a system wherein overlapping snapshots are taken by first starting a new snapshot by writing to a new snapshot cache and thereafter ending the writing to the prior snapshot cache. See Green, [0103]. Accordingly, it is noted that while Applicant's disclosed invention fails to provide a method for maintaining a snapshot at all times, the invention as disclosed by Green provides a means to restore a volume to any point in time during a time interval. While Applicant responsively asserts the argument that Green would be unable "to recreate the volume at a time between the creation time of a first snapshot at a time of one second and a second snapshot made at a time of two seconds," the Examiner notes that the disclosed invention of Green would

appropriately read upon the substantially continuous time interval defined in Applicant's

Specification. See Amendment, page 20.

Accordingly, for the aforementioned reasons above, the Examiner maintains the claim

rejections under 35 U.S.C. 103.

Conclusion

37.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set

forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from

the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date

of this final action and the advisory action is not mailed until after the end of the THREE-MONTH

shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX

MONTHS from the mailing date of this final action.

38.   Any inquiry concerning this communication or earlier communications from the examiner should

be directed to PAUL KIM whose telephone number is (571)272-2737. The examiner can normally be

reached on M-F, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Tony Mahmoudi can be reached on (571) 272-4078. The fax phone number for the organization where

this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application

Information Retrieval (PAIR) system. Status information for published applications may be obtained from

either Private PAIR or Public PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at

866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or

access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony Mahmoudi/   Paul Kim
Supervisory Patent Examiner, Art Unit 2169   Examiner, Art Unit 2169
                                                         TECH Center 2100

/pk/